

REMARKS

Claim 1 is currently amended to incorporate subject matter of claim 5. Claims 2, 7 and 8 have been amended. Claims 3-4 and 6 are as previously presented. Claim 5 has been cancelled. No new matter has been introduced.

Rejections under 35 U.S.C § 112, 2nd Paragraph

Claims 2, 7, and 8 stand rejected as allegedly being indefinite. Applicants submit that the present amendments to claims 2, 7, and 8 render these rejections moot.

Rejections under 35 U.S.C. § 103(a)

Claims 1-8 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Miyanaga *et al.* (U.S. Pat. No. 5,626,922). The Office alleges that Miyanaga discloses a “plasma CVD method using a pulsed microwave plasma to deposit a diamond film (abstract and examples)” (Office Action page 4, lines 7-8). The Office has further alleged that, in particular, Figures 3A-3C, 4, and 6A-6C disclose the pulse periods in previous claim 5. Applicants respectfully traverse this rejection.

To properly support rejection under 35 U.S.C. 103, the Office must provide articulated reasoning with rational underpinnings as detailed in the MPEP at 2141 (III) (emphasis added):

The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR* noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. The Court quoting *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006), stated that “[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, **there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.**” *KSR*, 550 U.S. at ___, 82 USPQ2d at 1396.

Applicants note that the specification of Miyanaga is silent with respect to the duty cycle of the applied periodic power. The figures cited in Miyanaga are merely demonstrative of applied power profiles having a duty cycle of 50% or greater (i.e., a ratio of the duration of the high-power state to the duration of the low-power state of 1 or greater). In particular, Figures 3A and

6A-6C depict that the system is in an active state for exactly half of the period, a ratio of the duration of the high-power state to the duration of the low-power state of 1. Figure 4 depicts that the system is in an active state for more than half of the period, a ratio of the duration of the high-power state to the duration of the low-power state of greater than 1. Figures 3B and 3C are not pertinent as they depict a power profile resulting from the superposition of multiple electromagnetic waves, and therefore the power profile of any single electromagnetic field is indeterminable (e.g., see column 2, lines 18-28).

The currently claimed invention discloses the use of a single microwave with a power profile consisting of a duty cycle "...between 10% and 50%. Thus the ratio of the time when high power is emitted to the time when low power is emitted may be between 1/9 and 1 (see, Specification, page 6 lines 31-35)." Applicants submit that "between 1/9 and 1," as used in the specification and claim 1 as currently amended, should be read to consist of the range of real values falling in the middle of, but not including, the value "1/9" or the value "1". Furthermore, Figures 2A and 2B clearly depict a power profile with a duty cycle of less than 50%, or a ratio of the duration of the high-power state to the duration of the low-power state of less than 1.

Miyanaga does not disclose the presently claimed duty cycles, that is, a periodic pulsed discharge in which the ratio of the duration of the high-power state to the duration of the low-power state is between 1/9 and 1. Further, the Office has not provided articulated reasoning with some rational underpinning for one skilled in the art to modify Miyanaga to yield the presently claimed invention, nor has the Office provided any reasoning that one skilled in the art would have a reasonable expectation of success in yielding a method for depositing a diamond film by modifying the Miyanaga to use the presently claimed duty cycles. Therefore, Applicants submit that the Office has not presented a *prima facie* case of obviousness of the present claims. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claims 1-8 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Vikharev *et al.* (Diamond and Related Materials 12 (2003) 272-276), as well as Chow (US 5240749) in view of Vikharev *et al.*

Applicants note that the Vikharev reference was made available on-line on **April 8, 2003** (http://www.elsevier.com/wps/find/journaldescription.cws_home/522587/description#descripti

on). The present application claims priority of the filing date of **January 10, 2003** of French patent application FR 03 00254 ('the French application').

Consistent with 37 CFR §1.55, Applicants submit herewith a statement verifying that International Application PCT/EP2003/007142 is an accurate translation of the French application. A certified copy of the French application was filed with the Office on 11 July 2005. Therefore, Applicants submit that the present application is entitled to claim the benefit of the January 10, 2003 filing date of the French application. As such *Vikharev et al.* does not qualify as prior art under any section of 35 U.S.C. §102, and as such, is not available as prior art against the present claims.

Accordingly, Applicants respectfully submit that the each of the present rejections based in whole or in part on *Vikharev et al.* are improper and request reconsideration and withdrawal of these rejections.

CONCLUSION

Applicants respectfully contend that all requirements of patentability have been met. Allowance of the claims and passage of the case to issue are therefore respectfully solicited.

The Examiner is urged to contact the Applicants' undersigned representative at (312) 913-2114 if the Examiner believes a discussion would expedite prosecution of this application.

Respectfully submitted,

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U.S. Patent Application No. 10/541,970

Title: High-Speed Diamond Growth Using a Microwave Plasma in Pulsed Mode

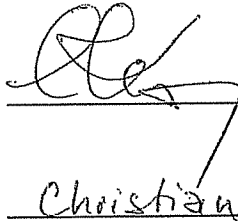
Inventors: Alix, et al.

Attorney Docket No. 05-583

Statement of Accuracy Pursuant to 37 CFR §1.55 (a)(4)(ii)

I Christian TEXIER hereby verify, consistent with 37 CFR §1.55 (a)(4)(ii), that **International Application No. PCT/EP2003/007142** is an accurate translation of **French Patent Application No. FR 03 00254**. A certified copy of the latter is presently on file with the USPTO in the above-referenced U.S. Patent Application.

Signed:



Printed Name:

Christian TEXIER

Date:

May 28, 2008